

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

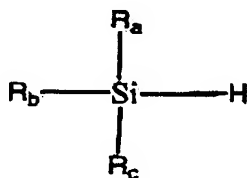
Listing of Claims:

1. (Original) Modified poly(ethynylene phenylene ethynylene silylene) polymer obtainable by selective addition of a compound containing only one reactive function on the acetylenic bonds of a poly(ethynylene phenylene ethynylene silylene) polymer.

2. (Currently Amended) The modified polymer according to Claim 1, in which the ~~said monofunctional~~ compound containing only one reactive function is chosen from compounds whose sole reactive function is a hydrogen.

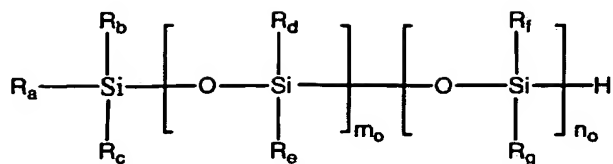
3. (Currently Amended) The modified polymer according to Claim 2, in which the ~~said~~ compound is chosen from monohydrogenated siliceous compounds.

4. (Currently Amended) The modified polymer according to Claim 3, in which the ~~said~~ monohydrogenated siliceous compound is a monohydrogenated silane corresponding to the following formula:



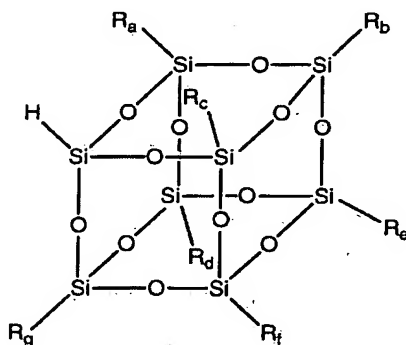
in which R_a , R_b and R_c , which may be identical or different, each independently represent an alkyl radical of 1 to 20 C such as a methyl radical, an alkenyl radical of 2 to 20 C, or an aryl radical of 6 to 20 C such as a phenyl radical.

5. (Currently Amended) The modified polymer according to Claim 3, in which the ~~said~~ monohydrogenated siliceous compound is a monohydrogenated siloxane corresponding to the following formula:



in which R_a , R_b , R_c , R_d , R_e , R_f and R_g , which may be identical or different, each independently represent an alkyl radical of 1 to 20 C such as a methyl radical, an alkenyl radical of 2 to 20 C, or an aryl radical of 6 to 20 C such as a phenyl radical, and n_0 and m_0 represent an integer from 0 to 1000.

6. (Currently Amended) The modified polymer according to Claim 3, in which the ~~said~~ monohydrogenated siliceous compound is a monohydrogenated silsesquioxane corresponding to the following formula:



in which R_a , R_b , R_c , R_d , R_e , R_f and R_g , which may be identical or different, each independently represent an alkyl radical of 1 to 20 C such as a methyl radical, an alkenyl radical of 2 to 20 C, or an aryl radical of 6 to 20 C such as a phenyl radical.

7. (Currently Amended) The modified polymer according to any one of Claims 1 to 6, in which the addition is performed in the presence of a catalyst.

8. (Currently Amended) The modified polymer according to Claim 7, in which the catalyst is a hydrosilylation reaction catalyst preferably chosen from platinum-based catalysts, such as H_2PtCl_6 , $\text{Pt}(\text{DVDS})$, $\text{Pt}(\text{TVTS})$, $\text{Pt}(\text{dba})$, in which DVDS represents divinylsilsiloxane, TVTS represents trivinyltrisiloxane and dba represents

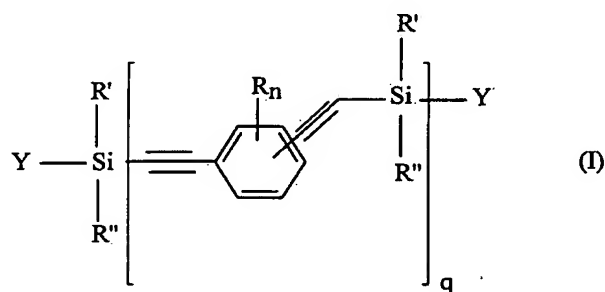
dibenzylideneacetone; and transition metal complexes, such as $\text{Rh}_6(\text{CO})_{16}$ or $\text{Rh}_4(\text{CO})_{12}$, $\text{C1Rh}(\text{PPh}_3)$, $\text{Ir}_4(\text{CO})_{12}$ and $\text{Pd}(\text{dba})$.

9. (Currently Amended) The modified polymer according to claim 1 ~~any one of the preceding claims~~, in which the addition is performed at a temperature of from -20°C to 200°C and preferably from said 30 to 150°C .

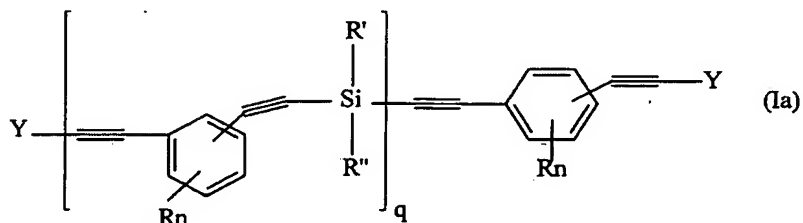
10. (Currently Amended) The modified polymer according to claim 1 ~~any one of the preceding claims~~, in which the said compound represents from 0.1% to 75%, ~~preferably from 1% to 50% and more preferably from 10% to 40% by mass of the modified polymer.~~

11. (Currently Amended) The modified polymer according to claim 1 ~~any one of the preceding claims~~, in which the selective addition is performed under an atmosphere of an inert gas such as argon.

12. (Currently Amended) The modified polymer according to ~~any one of Claims claim 1 to 11~~, in which the poly (ethynylene phenylene ethynylene silylene) PEPES polymer corresponds to formula (I) below:



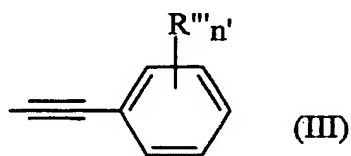
or to formula (Ia) below:



in which the phenylene group of the central repeating unit may be in the o, m or p form; R represents a halogen atom (such as F, Cl, Br and I), an alkyl group (linear or branched) containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms (such as methyl, ethyl, propyl, butyl, cyclohexyl), an alkoxy group containing from 1 to 20 carbon atoms (such as methoxy, ethoxy, propoxy), an aryl group containing from 6 to 20 carbon atoms (such as a phenyl group), an aryloxy group containing from 6 to 20 carbon atoms (such as a phenoxy group), an alkenyl group (linear or branched) containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms (such as vinyl, allyl, cyclohexenyl), an alkynyl group containing from 2 to 20 carbon atoms (such as ethynyl, propargyl), an amino group, an amino group substituted with one or two substituents containing from 2 to 20 carbon atoms (such as dimethylamino, diethylamino, ethylmethylamino, methylphenylamino) or a silanyl group containing from 1 to 10 silicon atoms (such as silyl, disilanyl ($-\text{Si}_2\text{H}_5$), dimethylsilyl, trimethylsilyl and tetramethyldisilanyl), one or more hydrogen atoms linked to the carbon atoms of R, may be replaced with halogen atoms (such as F, Cl, Br and I), alkyl groups, alkoxy groups (such as methoxy, ethoxy and propoxy), aryl groups, aryloxy groups (such as a phenoxy group), amino groups, amino groups substituted with one or two substituents or silanyl groups; n is an integer from 0 to 4 and q is an integer from 1 to 1000, for example from 1 to 40; R' and R'', which may be identical or different, represent a hydrogen atom, an alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms, an alkoxy group containing from 1 to 20 carbon atoms, an aryl group containing from 6 to 20 carbon atoms, an aryloxy group containing from 6 to 20 carbon atoms, an alkenyl group containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms, an alkynyl group containing from 2 to 20 carbon atoms, one or more of the hydrogen atoms linked to the carbon atoms of R' and R'' possibly being replaced with halogen atoms, alkyl groups, alkoxy

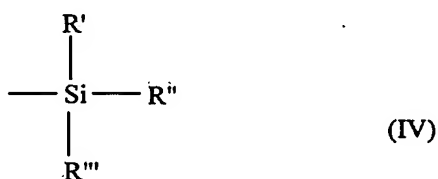
groups, aryl groups, aryloxy groups, amino groups, disubstituted amino groups or silanyl groups; examples of these groups have already been mentioned above for R; and Y represents a group derived from a chain-limiting agent.

13. (Currently Amended) The modified polymer according to Claim 12, in which the PEPES polymer corresponds to formula (I) and Y represents a group of formula (III):



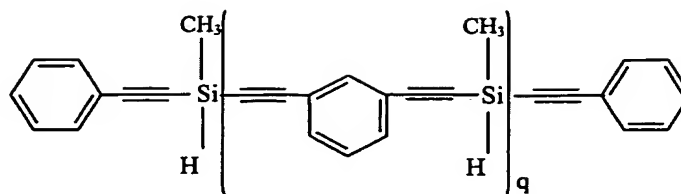
in which R''' has the same meaning as R and may be identical to or different from the latter, and n' has the same meaning as n and may be identical to or different from the latter.

14. (Currently Amended) The modified polymer according to Claim ~~12~~ 13, in which the PEPES polymer corresponds to formula (Ia) and Y represents a group of formula (IV):



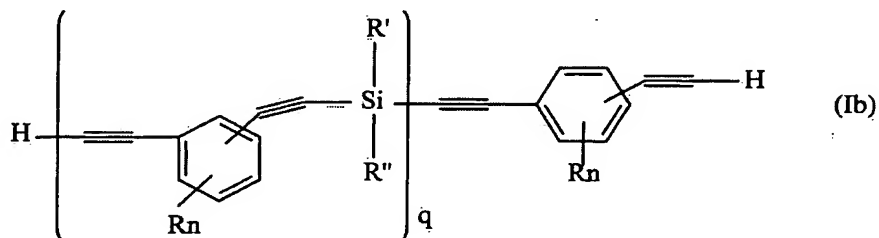
in which R', R'' and R''', which may be identical or different, ~~have the meaning already given in Claim 12 and Claim 13.~~

15. (Currently Amended) The modified polymer according to Claim 12, in which the PEPES polymer corresponds to the following formula:



in which q is an integer from 1 to 1000.

16. (Currently Amended) The modified polymer according to Claim ~~12~~ 15, in which the PEPES polymer is a polymer of determined molecular mass, which may be obtained (which is obtainable) by hydrolysis of a polymer of formula (Ia) and which corresponds to formula (Ib) below:



in which R, R', R'', n and q have the meaning already given in Claims 12 and 15.

17. (Currently Amended) The modified polymer according to Claim 12, in which the PEPES polymer has a molar ratio of the groups Y at the end of the chain to the ethynylene phenylene ethynylene silylene repeating units of from 0.002 to 2 and preferably from 0.1 to 1.

18. (Currently Amended) The modified polymer according to ~~Claims 12 and claim~~ claim 16, in which the number-average molecular mass of polymers (I), (Ia) and (Ib) is from 400 to 10000, ~~and preferably from 400 to 5000~~, and the weight-average molecular mass is from 600 to 20 000 ~~and preferably from 600 to 10 000~~.

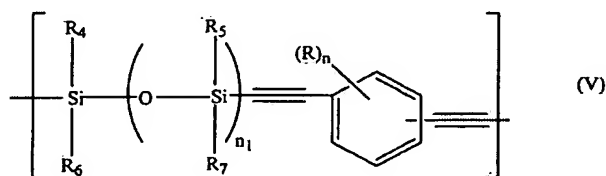
19. (Currently Amended) The modified polymer according to ~~any one of Claims claim 1 to 11~~, in which the poly(ethynylene phenylene ethynylene silylene) (PEPES) polymer is a polymer comprising at least one repeating unit, the ~~said~~ repeating unit comprising two acetylenic bonds, at least one silicon atom and at least one inert spacer group.

20. (Currently Amended) The modified polymer according to Claim 19, in which the ~~said~~ polymer also comprises groups (Y) derived from a chain-limiting agent.

21. (Currently Amended) The modified polymer according to Claim 19, in which the ~~said~~ inert spacer group of the polymer does not participate during crosslinking.

22. (Currently Amended) The modified polymer according to Claim 19, in which the ~~said~~ spacer group(s) of the polymer is (are) chosen from groups comprising several aromatic nuclei linked via at least one covalent bond and/or at least one divalent group, polysiloxane groups, polysilane groups and all possible combinations of two or more of these groups.

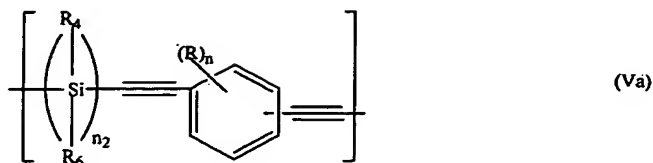
23. (Currently Amended) The modified polymer according to Claim 19, in which the ~~said~~ PEPES polymer is a polymer comprising a repeating unit of formula (V);



in which the phenylene group of the central repeating unit may be in the o, m or p form; R represents a halogen atom (such as F, Cl, Br and I), an alkyl group (linear or branched) containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms (such as methyl, ethyl, propyl, butyl, cyclohexyl), an alkoxy group containing from 1 to 20 carbon atoms (such as methoxy, ethoxy, propoxy), an aryl group containing from 6 to

20 carbon atoms (such as a phenyl group), an aryloxy group containing from 6 to 20 carbon atoms (such as a phenoxy group), an alkenyl group (linear or branched) containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms (such as vinyl, allyl, cyclohexenyl), an alkynyl group containing from 2 to 20 carbon atoms (such as ethynyl, propargyl), an amino group, an amino group substituted with one or two substituents containing from 2 to 20 carbon atoms (such as dimethylamino, diethylamino, ethylmethylamino, methylphenylamino) or a silanyl group containing from 1 to 10 silicon atoms (such as silyl, disilanyl ($-\text{Si}_2\text{H}_5$), dimethylsilyl, trimethylsilyl and tetramethyldisilanyl), one or more hydrogen atoms linked to the carbon atoms of R, may be replaced with halogen atoms (such as F, Cl, Br and I), alkyl groups, alkoxy groups (such as methoxy, ethoxy and propoxy), aryl groups, aryloxy groups (such as a phenoxy group), amino groups, amino groups substituted with one or two substituents or silanyl groups; R_4 , R_5 , R_6 and R_7 , which may be identical or different, represent a hydrogen atom; an alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms, an alkoxy group containing from 1 to 20 carbon atoms, an aryl group containing from 6 to 20 carbon atoms, an aryloxy group containing from 6 to 20 carbon atoms, an alkenyl group containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms, an alkynyl group containing from 2 to 20 carbon atoms, one or more of the hydrogen atoms linked to the carbon atoms of R_4 , R_5 , R_6 and R_7 possibly being replaced with halogen atoms, alkyl groups, alkoxy groups, aryl groups, aryloxy groups, amino groups, disubstituted amino groups or silanyl groups; examples of these groups have already been mentioned above for R, n is an integer from 0 to 4, and n_1 is an integer from 1 to 10 and preferably from 1 to 4; this repeating unit is generally repeated n_3 times, with n_3 being an integer, for example from 2 to 1000.

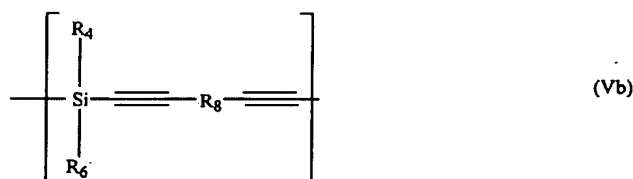
24. (Currently Amended) The modified polymer according to Claim 19, in which the said PEPES polymer is a polymer comprising a repeating unit of formula:



in which the phenylene group may be in the o, m or p form, and R represents a halogen atom (such as F, Cl, Br and I), an alkyl group (linear or branched) containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms (such as methyl, ethyl, propyl, butyl, cyclohexyl), an alkoxy group containing from 1 to 20 carbon atoms (such as methoxy, ethoxy, propoxy), an aryl group containing from 6 to 20 carbon atoms (such as a phenyl group), an aryloxy group containing from 6 to 20 carbon atoms (such as a phenoxy group), an alkenyl group (linear or branched) containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms (such as vinyl, allyl, cyclohexenyl), an alkynyl group containing from 2 to 20 carbon atoms (such as ethynyl, propargyl), an amino group, an amino group substituted with one or two substituents containing from 2 to 20 carbon atoms (such as dimethylamino, diethylamino, ethylmethylamino, methylphenylamino) or a silanyl group containing from 1 to 10 silicon atoms (such as silyl, disilanyl (-Si₂H₅), dimethylsilyl, trimethylsilyl and tetramethyldisilanyl), one or more hydrogen atoms linked to the carbon atoms of R, may be replaced with halogen atoms (such as F, Cl, Br and I), alkyl groups, alkoxy groups (such as methoxy, ethoxy and propoxy), aryl groups, aryloxy groups (such as a phenoxy group), amino groups, amino groups substituted with one or two substituents or silanyl groups; R₄, and R₆, which may be identical or different, represent a hydrogen atom; an alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms, an alkoxy group containing from 1 to 20 carbon atoms, an aryl group containing from 6 to 20 carbon atoms, an aryloxy group containing from 6 to 20 carbon atoms, an alkenyl group containing from 2 to 20 carbon

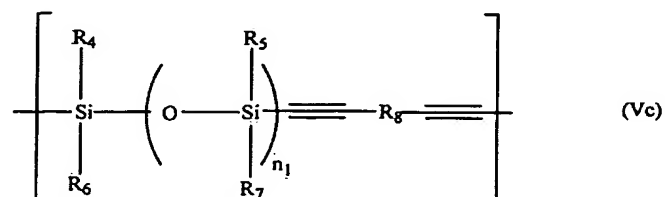
atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms, an alkynyl group containing from 2 to 20 carbon atoms, one or more of the hydrogen atoms linked to the carbon atoms of R₄, and R₆ possibly being replaced with halogen atoms, alkyl groups, alkoxy groups, aryl groups, aryloxy groups, amino groups, disubstituted amino groups or silanyl groups; examples of these groups have already been mentioned above for R, n is an integer from 0 to 4, R, R₄, R₆ and n have the meaning already given in Claim 23 and n₂ is an integer from 2 to 10.

25. (Currently Amended) The modified polymer according to Claim 19, in which the ~~said~~ PEPES polymer is a polymer comprising a repeating unit of formula:



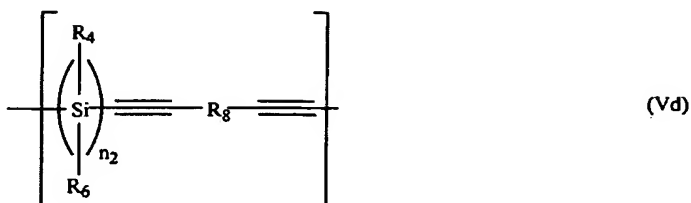
in which R₄ and R₆ have the meaning already given in Claim 23, R₄ and R₆, which may be identical or different, represent a hydrogen atom; an alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms, an alkoxy group containing from 1 to 20 carbon atoms, an aryl group containing from 6 to 20 carbon atoms, an aryloxy group containing from 6 to 20 carbon atoms, an alkenyl group containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms, an alkynyl group containing from 2 to 20 carbon atoms, one or more of the hydrogen atoms linked to the carbon atoms of R₄, and R₆ possibly being replaced with halogen atoms, alkyl groups, alkoxy groups, aryl groups, aryloxy groups, amino groups, disubstituted amino groups or silanyl groups; and R₈ represents a group comprising at least two aromatic nuclei comprising, for example, from 6 to 20 C, linked via at least one covalent bond and/or at least one divalent group.

26. (Currently Amended) The modified polymer according to Claim 19, in which the said PEPES polymer is a polymer comprising a repeating unit of formula:



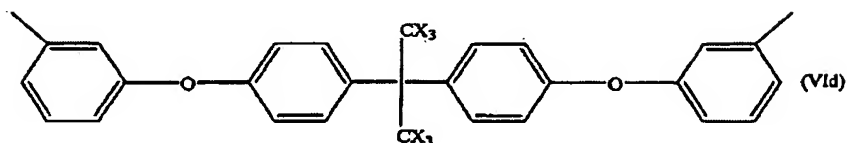
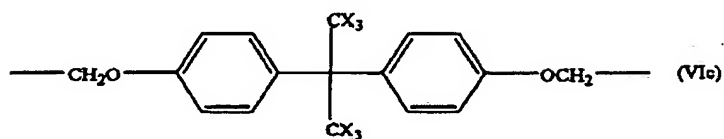
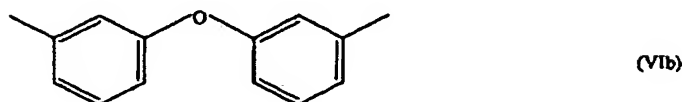
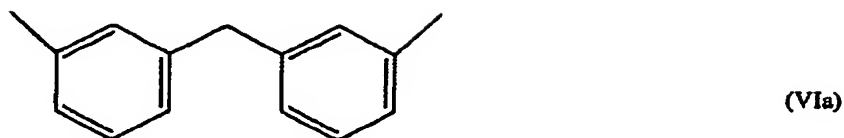
in which ~~R₄, R₅, R₆, R₇, R₈ and n₁ have the meaning already given in Claims 23 to 25.~~ R₄, R₅, R₆ and R₇, which may be identical or different, represent a hydrogen atom; an alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms, an alkoxy group containing from 1 to 20 carbon atoms, an aryl group containing from 6 to 20 carbon atoms, an aryloxy group containing from 6 to 20 carbon atoms, an alkenyl group containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms, an alkynyl group containing from 2 to 20 carbon atoms, one or more of the hydrogen atoms linked to the carbon atoms of R₄, R₅, R₆ and R₇ possibly being replaced with halogen atoms, alkyl groups, alkoxy groups, aryl groups, aryloxy groups, amino groups, disubstituted amino groups or silanyl groups; R₈ represents a group comprising at least two aromatic nuclei comprising, for example, from 6 to 20 C, linked via at least one covalent bond and/or at least one divalent group, and n₁ is an integer from 1 to 10 and preferably from 1 to 4.

27. (Currently Amended) The modified polymer according to Claim 19, in which the said polymer is a polymer comprising a repeating unit of formula:



in which ~~R₄, R₆, R₈ and n₂ have the meaning already given in Claims 23 to 25.~~ R₄, and R₆, which may be identical or different, represent a hydrogen atom; an alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms, an alkoxy group containing from 1 to 20 carbon atoms, an aryl group containing from 6 to 20 carbon atoms, an aryloxy group containing from 6 to 20 carbon atoms, an alkenyl group containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms, an alkynyl group containing from 2 to 20 carbon atoms, one or more of the hydrogen atoms linked to the carbon atoms of R₄, and R₆, possibly being replaced with halogen atoms, alkyl groups, alkoxy groups, aryl groups, aryloxy groups, amino groups, disubstituted amino groups or silanyl groups; R₈ represents a group comprising at least two aromatic nuclei comprising, for example, from 6 to 20 C, linked via at least one covalent bond and/or at least one divalent group, and n₂ is an integer from 2 to 10.

28. (Currently Amended) The modified polymer according to any one of Claims 25 to 27, in which the group R₈ of the PEPES polymer is chosen from the following groups:

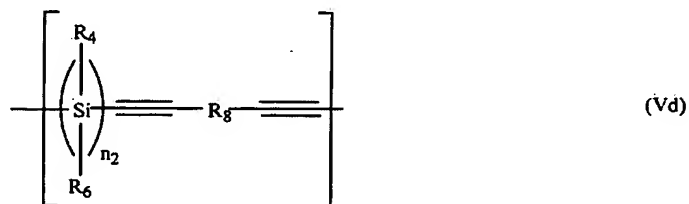
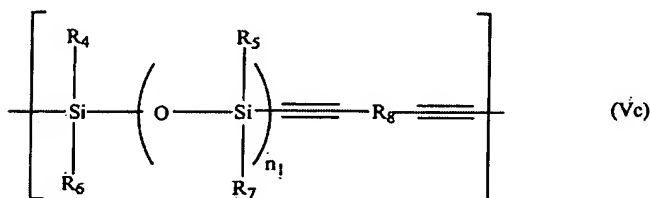
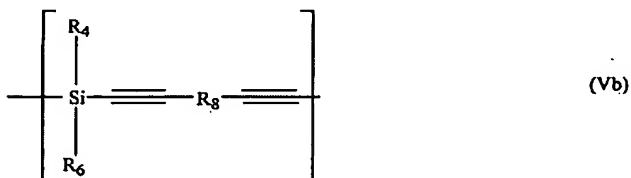
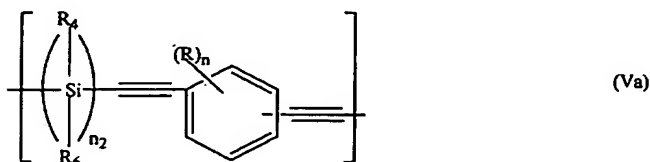
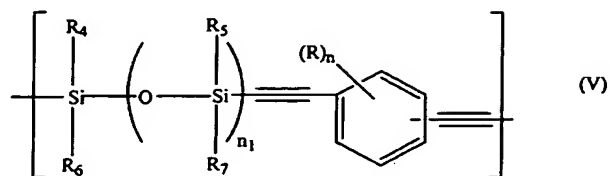


in which X represents a hydrogen atom or a halogen atom (F, Cl, Br or I).

29. (Currently Amended) The modified polymer according to ~~any one of Claims claim 19 to 28~~, in which the PEPES polymer comprises a repeating unit repeated n_3 times, with n_3 being an integer, for example from 2 to 1000.

30. (Currently Amended) The modified polymer according to Claim 19, in which the polymer comprises several different repeating units comprising at least one inert spacer group.

31. (Currently Amended) The modified polymer according to Claim 30, in which the said repeating units of the polymer, comprising at least one inert spacer group, are chosen from the repeating units of formulae (V), (Va), (Vb), (Ve) and (Vd) ~~defined, respectively, in Claims 23, 24, 25, 26 and 27. :~~



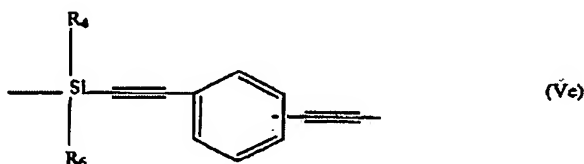
in which the phenylene group of the central repeating unit may be in the o, m or p form; R represents a halogen atom (such as F, Cl, Br and I), an alkyl group (linear or branched) containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms (such as methyl, ethyl, propyl, butyl, cyclohexyl), an alkoxy group containing from 1 to 20 carbon atoms (such as methoxy, ethoxy, propoxy), an aryl group containing from 6 to 20 carbon atoms (such as a phenyl group), an aryloxy group containing from 6 to 20 carbon

atoms (such as a phenoxy group), an alkenyl group (linear or branched) containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms (such as vinyl, allyl, cyclohexenyl), an alkynyl group containing from 2 to 20 carbon atoms (such as ethynyl, propargyl), an amino group, an amino group substituted with one or two substituents containing from 2 to 20 carbon atoms (such as dimethylamino, diethylamino, ethylmethylamino, methylphenylamino) or a silanyl group containing from 1 to 10 silicon atoms (such as silyl, disilanyl (-Si₂H₅), dimethylsilyl, trimethylsilyl and tetramethyldisilanyl), one or more hydrogen atoms linked to the carbon atoms of R, may be replaced with halogen atoms (such as F, Cl, Br and I), alkyl groups, alkoxy groups (such as methoxy, ethoxy and propoxy), aryl groups, aryloxy groups (such as a phenoxy group), amino groups, amino groups substituted with one or two substituents or silanyl groups; R₄, R₅, R₆ and R₇, which may be identical or different, represent a hydrogen atom; an alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms, an alkoxy group containing from 1 to 20 carbon atoms, an aryl group containing from 6 to 20 carbon atoms, an aryloxy group containing from 6 to 20 carbon atoms, an alkenyl group containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms, an alkynyl group containing from 2 to 20 carbon atoms, one or more of the hydrogen atoms linked to the carbon atoms of R₄, R₅, R₆ and R₇ possibly being replaced with halogen atoms, alkyl groups, alkoxy groups, aryl groups, aryloxy groups, amino groups, disubstituted amino groups or silanyl groups; examples of these groups have already been mentioned above for R, n is an integer from 0 to 4; R₈ represents a group comprising at least two aromatic nuclei comprising, for example, from 6 to 20 C, linked via at least one covalent bond and/or at least one divalent group; n₁ is an integer from 1 to 10 and preferably from 1 to 4; n₂ is an integer from 2 to 10; and n₃ is an integer, for example from 2 to 1000.

32. (Currently Amended) The modified polymer according to Claim 31, in which the ~~said~~ repeating units of the polymer are repeated x_1 , x_2 , x_3 , x_4 and x_5 times, respectively, x_1 , x_2 , x_3 , x_4 and x_5 representing integers from 0 to 100000, on condition that at least two from among x_1 , x_2 , x_3 , x_4 and x_5 are other than 0.

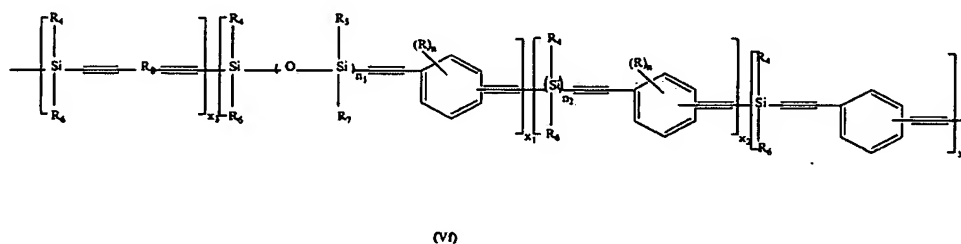
33. (Currently Amended) The modified polymer according to ~~any one of Claims claim~~ 19 ~~to~~ 32, in which the polymer also comprises one or more repeating units not comprising an inert spacer group.

34. (Currently Amended) The modified polymer according to Claim 33, in which the ~~said~~ repeating unit of the polymer, which does not comprise an inert spacer group, corresponds to the formula:



35. (Currently Amended) The modified polymer according to Claim 33 or 34, in which the ~~said~~ repeating unit of the polymer, not comprising an inert spacer group, is repeated x_6 times, x_6 representing an integer from 0 to 100000.

36. (Currently Amended) The modified polymer according to ~~any one of Claims claim~~ 30 ~~to~~ 35, in which the polymer corresponds to the formula:



in which x_1 , x_2 , x_3 and x_6 are ~~as defined, respectively, in Claims 32 and 35,~~ integers from 0 to 100000, on condition that at least two from among x_1 , x_2 and x_3 are other than 0.

37. (Currently Amended) The modified polymer according to ~~any one of Claims claim 30 to 36,~~ in which the polymer has a number-average molecular mass of from 400 to 10 000 and a weight-average molecular mass of from 500 to 1 000 000.

38. (Currently Amended) A Process for preparing a modified polymer according to any one of Claims 1 to 37 poly(ethynylene phenylene ethynylene silylene) polymer by selective addition of a compound containing only one reactive function on the acetylenic bonds of a poly(ethynylene phenylene ethynylene silylene) polymer, in which the following successive steps are performed:

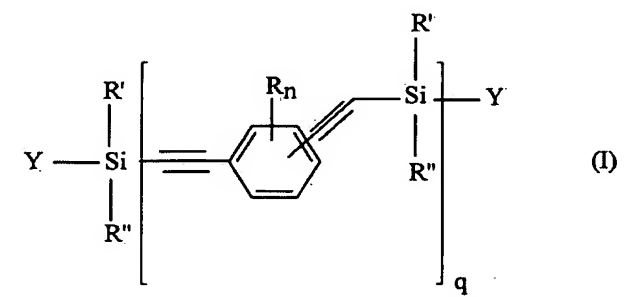
- a) a poly(ethynylene phenylene ethynylene silylene) (PEPES) polymer is introduced into a reactor;
 - b) a compound containing only one reactive function is added to the said PEPES;
 - c) the said PEPES and the said compound are mixed together homogeneously;
- a catalyst may optionally be added to the reactor either during step b), in the form of a mixture of the catalyst and of the compound containing only one reactive function, or after step c);
- d) the compound, the PEPES and the optional catalyst are left in contact until the selective addition of the compound containing only one reactive function to the acetylenic bonds of the PEPES polymer is complete;
 - e) the modified polymer thus formed is recovered.

39. (Currently Amended) The process according to Claim 38, in which the said compound containing only one reactive function is a compound chosen from compounds whose sole reactive function is hydrogen, ~~as defined in any one of Claims 2 to 6.~~

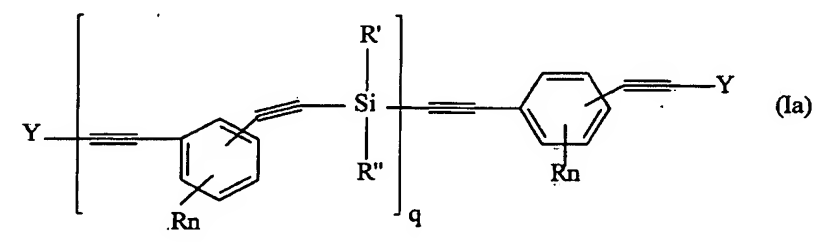
40. (Currently Amended) The process according to Claim 38 ~~or Claim 39~~, in which a catalyst is added to the reactor, either during step b) in the form of a mixture of the catalyst and of the compound containing only one reactive function, or to the mixture of the PEPES and of the compound containing only one reactive function after step c).

41. (Currently Amended) The process according to Claim 40, in which the ~~said~~ catalyst is a hydrosilylation reaction catalyst preferably chosen from platinum-based catalysts, such as H_2PtCl_6 , $\text{Pt}(\text{DVDS})$, $\text{Pt}(\text{TVTS})$, $\text{Pt}(\text{dba})$, in which DVDS represents divinyldisiloxane, TVTS represents trivinyltrisiloxane and dba represents dibenzylideneacetone; and transition metal complexes, such as $\text{Rh}_6(\text{CO})_{16}$ or $\text{Rh}_4(\text{CO})_{12}$, $\text{C1Rh}(\text{PPh}_3)\text{Ir}_4(\text{CO})_{12}$ and $\text{Pd}(\text{dba})$.

42. (Currently Amended) The process according to claim ~~any one of Claims 38 to 41~~, in which the ~~said~~ poly(ethynylene phenylene ethynylene silylene) polymer PEPES ~~is as defined in one of Claims 12 to 37~~ corresponds to formula (I) below:



or to formula (Ia) below:



in which the phenylene group of the central repeating unit may be in the o, m or p form; R represents a halogen atom (such as F, Cl, Br and I), an alkyl group (linear or branched) containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms (such as methyl, ethyl, propyl, butyl, cyclohexyl), an alkoxy group containing from 1 to 20 carbon atoms (such as methoxy, ethoxy, propoxy), an aryl group containing from 6 to 20 carbon atoms (such as a phenyl group), an aryloxy group containing from 6 to 20 carbon atoms (such as a phenoxy group), an alkenyl group (linear or branched) containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms (such as vinyl, allyl, cyclohexenyl), an alkynyl group containing from 2 to 20 carbon atoms (such as ethynyl, propargyl), an amino group, an amino group substituted with one or two substituents containing from 2 to 20 carbon atoms (such as dimethylamino, diethylamino, ethylmethylamino, methylphenylamino) or a silanyl group containing from 1 to 10 silicon atoms (such as silyl, disilanyl ($-\text{Si}_2\text{H}_5$), dimethylsilyl, trimethylsilyl and tetramethyldisilanyl), one or more hydrogen atoms linked to the carbon atoms of R, may be replaced with halogen atoms (such as F, Cl, Br and I), alkyl groups, alkoxy groups (such as methoxy, ethoxy and propoxy), aryl groups, aryloxy groups (such as a phenoxy group), amino groups, amino groups substituted with one or two substituents or silanyl groups; n is an integer from 0 to 4 and q is an integer from 1 to 1000, for example from 1 to 40; R' and R'', which may be identical or different, represent a hydrogen atom, an alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms, an alkoxy group containing from 1 to 20 carbon atoms, an aryl group containing from 6 to 20 carbon atoms, an aryloxy group containing from 6 to 20 carbon atoms, an alkenyl group containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms, an alkynyl group containing from 2 to 20 carbon atoms, one or more of the hydrogen atoms linked to the carbon atoms of R' and R'' possibly being replaced with halogen atoms, alkyl groups, alkoxy

groups, aryl groups, aryloxy groups, amino groups, disubstituted amino groups or silanyl groups; examples of these groups have already been mentioned above for R; and Y represents a group derived from a chain-limiting agent.

43. (Currently Amended) The process according to ~~any one of Claims~~ claim 38 to 42, in which steps b) to c) and d) are performed with stirring.

44. (Currently Amended) The process according to claim 38 ~~any one of the preceding claims~~, in which the process is performed at a temperature of from -20°C to 200°C.

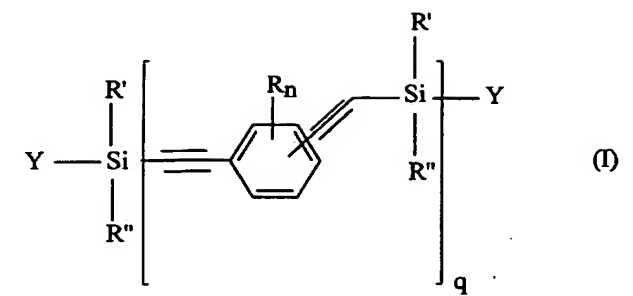
45. (Currently Amended) The process according to claim ~~any one of Claims~~ 38 to [[44]], in which the process is performed under an atmosphere of an inert gas such as argon.

46. (Currently Amended) The process according to ~~any one of Claims~~ claim 38 to 45, in which, in step d), the PEPES, the compound and the optional catalyst are left in contact for a time of from 0.1 to 24 hours, preferably from 0.5 to 8 hours and more preferably from 2 to 6 hours.

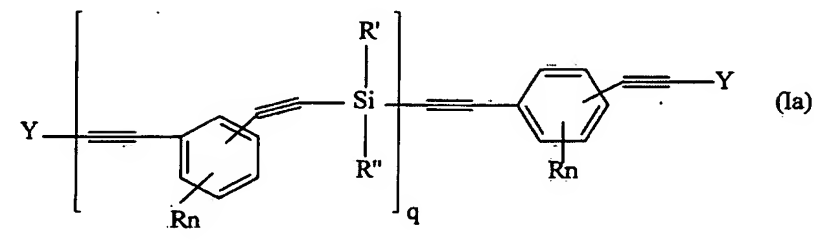
47. (Currently Amended) A composition comprising a poly(ethynylene phenylene ethynylene silylene) polymer, a compound containing only one reactive function and, optionally, a catalyst.

48. (Currently Amended) The composition according to Claim 47, in which the said compound containing only one reactive function is a compound chosen from compounds whose sole reactive function is hydrogen. ~~as defined in any one of Claims 2 to 6.~~

49. (Currently Amended) The composition according to Claim 47 ~~or Claim 48~~, in which the said poly(ethynylene phenylene ethynylene silylene) polymer PEPES ~~is as defined in one of Claims 12 to 37.~~ corresponds to formula (I) below:



or to formula (Ia) below:



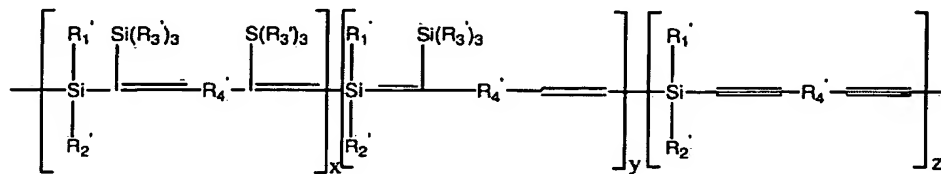
in which the phenylene group of the central repeating unit may be in the o, m or p form; R represents a halogen atom (such as F, Cl, Br and I), an alkyl group (linear or branched) containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms (such as methyl, ethyl, propyl, butyl, cyclohexyl), an alkoxy group containing from 1 to 20 carbon atoms (such as methoxy, ethoxy, propoxy), an aryl group containing from 6 to 20 carbon atoms (such as a phenyl group), an aryloxy group containing from 6 to 20 carbon atoms (such as a phenoxy group), an alkenyl group (linear or branched) containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms (such as vinyl, allyl, cyclohexenyl), an alkynyl group containing from 2 to 20 carbon atoms (such as ethynyl, propargyl), an amino group, an amino group substituted with one or two substituents containing from 2 to 20 carbon atoms (such as dimethylamino, diethylamino, ethylmethylamino, methylphenylamino) or a silanyl group containing from 1 to 10 silicon atoms (such as silyl, disilanyl ($-\text{Si}_2\text{H}_5$), dimethylsilyl, trimethylsilyl and tetramethyldisilanyl), one or more hydrogen atoms linked to the carbon atoms of R, may be replaced with halogen atoms (such as F, Cl, Br and I), alkyl groups, alkoxy groups (such as methoxy, ethoxy and

propoxy), aryl groups, aryloxy groups (such as a phenoxy group), amino groups, amino groups substituted with one or two substituents or silanyl groups; n is an integer from 0 to 4 and q is an integer from 1 to 1000, for example from 1 to 40; R' and R", which may be identical or different, represent a hydrogen atom, an alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms, an alkoxy group containing from 1 to 20 carbon atoms, an aryl group containing from 6 to 20 carbon atoms, an aryloxy group containing from 6 to 20 carbon atoms, an alkenyl group containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms, an alkynyl group containing from 2 to 20 carbon atoms, one or more of the hydrogen atoms linked to the carbon atoms of R' and R" possibly being replaced with halogen atoms, alkyl groups, alkoxy groups, aryl groups, aryloxy groups, amino groups, disubstituted amino groups or silanyl groups; examples of these groups have already been mentioned above for R; and Y represents a group derived from a chain-limiting agent.

50. (Currently Amended) The composition according to ~~any one of Claims claim~~ 47 to 49, in which the ~~said~~ catalyst is a hydrosilylation reaction catalyst preferably chosen from platinum-based catalysts, such as H_2PtCl_6 , Pt(DVDS), Pt(TVTS), Pt(dba), in which DVDS represents divinyldisiloxane, TVTS represents trivinyltrisiloxane and dba represents dibenzylideneacetone; and transition metal complexes, such as $Rh_6(CO)_{16}$ or $Rh_4(CO)_{12}$, $C1Rh(PPh)_3$, $Ir_4(CO)_{12}$ and Pd(dba).

51. (Currently Amended) The composition according to ~~claim~~ ~~any one of Claims~~ 47 to 50, which comprises further comprising from 1% to 99% by mass of poly(ethynylene phenylene ethynylene silylene) polymer, from 1% to 50% by mass of compound containing only one reactive function and, optionally, from 0 to 1% by mass of catalyst.

52. (Currently Amended) A modified poly(ethynylene phenylene ethynylene silylene) polymer corresponding to formula (VII) below:

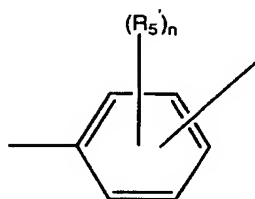


(VII)

in which R₁' and R₂', which may be identical or different, represent a hydrogen atom, an alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms, an alkoxy group containing from 1 to 20 carbon atoms, an aryl group containing from 6 to 20 carbon atoms, an aryloxy group containing from 6 to 20 carbon atoms, an alkenyl group containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms, an alkynyl group containing from 2 to 20 carbon atoms, one or more of the hydrogen atoms linked to the carbon atoms of R₁' and R₂' may be replaced with halogen atoms, alkyl groups, alkoxy groups, aryl groups, aryloxy groups, amino groups, disubstituted amino groups or silanyl groups;

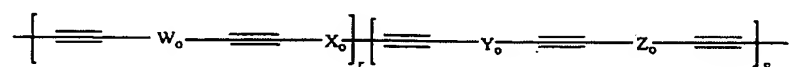
R₃' represents an alkyl radical of 1 to 20 C such as a methyl radical, an alkenyl radical of 10 to 20 C, or an aryl radical of 6 to 20 C such as a phenyl radical; and

R₄' represents:



in which the phenylene group may be in the o, m or p form and in which R₅' represents a halogen atom (such as F, Cl, Br and I), a (linear or branched) alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms (such as methyl, ethyl, propyl, butyl, cyclohexyl), an alkoxy group containing from 1 to 20 carbon atoms (such as methoxy, ethoxy, propoxy), an aryl group containing from 6 to 20 carbon atoms (such as a phenyl group), an aryloxy group containing from 6 to 20 carbon atoms (such as a phenoxy group), a (linear or branched) alkenyl group containing from 2 to 20 carbon atoms, a cycloalkenyl group containing from 3 to 20 carbon atoms (such as vinyl, alkyl, cyclohexenyl), an alkynyl group containing from 2 to 20 carbon atoms (such as ethynyl, propargyl), an amino group, an amino group substituted with one or two substituents containing from 2 to 20 carbon atoms (such as dimethylamino, diethylamino, ethylmethylamino, methylphenylamino) or a silanyl group containing from 1 to 10 silicon atoms (such as silyl, disilanyl (-Si₂H₅), dimethylsilyl, trimethylsilyl and tetramethyldisilanyl), one or more hydrogen atoms linked to the carbon atoms of R possibly being replaced with halogen atoms (such as F, Cl, Br and I), alkyl groups, alkoxy groups (such as methoxy, ethoxy and propoxy), aryl groups, aryloxy groups (such as a phenoxy group), amino groups, amino groups substituted with one or two substituents, or silanyl groups; n is an integer from 0 to 4; or R₄' represents a group containing at least two aromatic nuclei comprising, for example, from 6 to 20 C, linked via at least one covalent bond and/or at least one divalent group; and x and y and z represent, respectively, integers between 0 and 1000.

53. (Currently Amended) A polymer corresponding to the following formula:

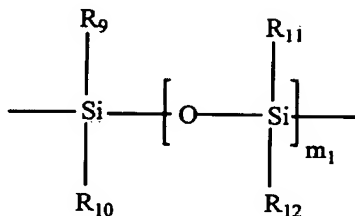


in which:

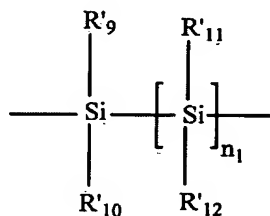
-r and s are integers from 1 to 1000;

-X_{oo} and Z_o, which may be identical or different, each independently represent a group α₁, or a group combination of these groups:

- in which α₁ represents:



- in which α₁ represents:

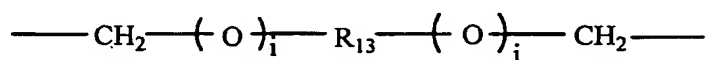


in which:

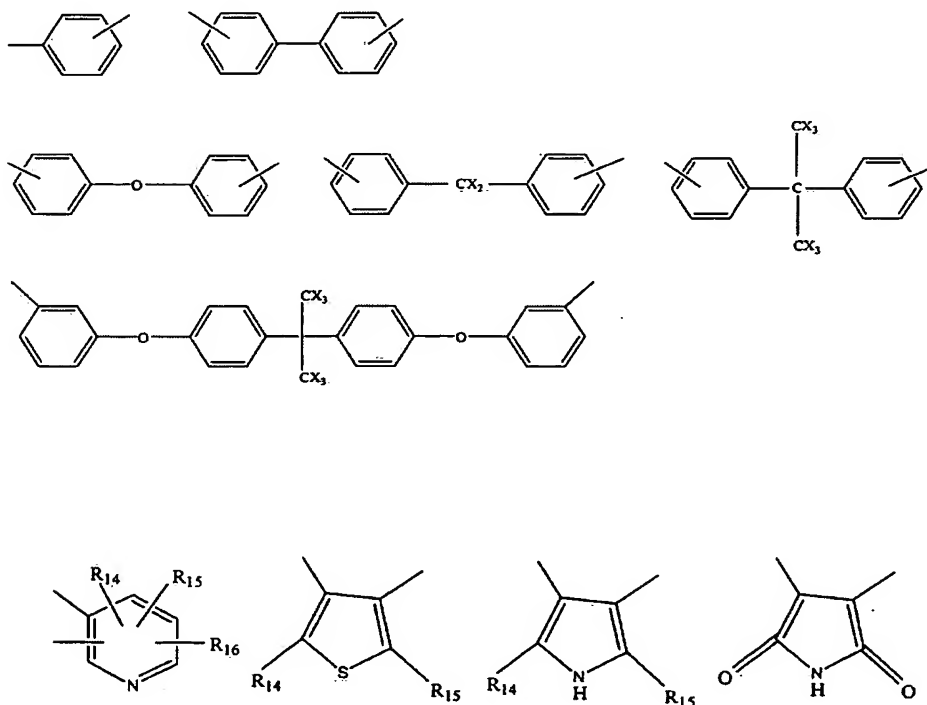
- m₁ and n₁ are integers generally between 1 and 1000 and preferably between 1 and 10;

R₉, R₁₁, R₁₂, R'₉, R'₁₀, R'₁₁ and R'₁₂, which may be identical or different, each independently represent a hydrogen atom, an alkyl group containing from 1 to 20 carbon atoms, an alkenyl group containing from 2 to 20 carbon atoms, an alkynyl group containing from 2 to 20 carbon atoms or an aryl group containing from 6 to 20 carbon atoms, the hydrogen atoms linked to the carbon atoms of R₉, R₁₀, R₁₁ and R₁₂ and R'₉, R'₁₀, R'₁₁ and R'₁₂ possibly being partially or totally replaced with halogen atoms, alkoxy groups, phenoxy groups, disubstituted amino groups or silanyl groups;

- W_o and Y_o , which may be identical or different, each independently represent a group B_1 , a group B_2 , a group B_3 or a combination of these groups:
- B_1 represents:



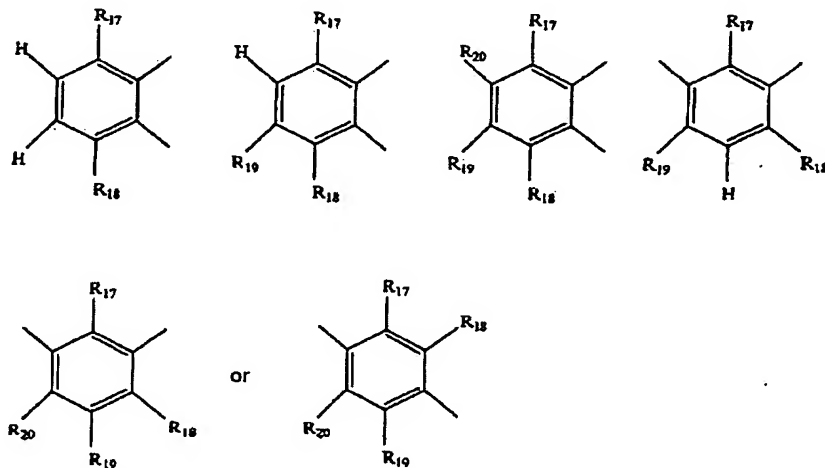
in which i is an integer equal to 0 or 1 and the group R_{13} represents any divalent chemical group comprising one or more aromatic or heterocyclic rings or nuclei; preferably, the group R_{13} is chosen from the following groups:



in which X represents a hydrogen atom or a halogen (F Cl, Br or I);

and in which R_{14} , R_{15} and R_{16} , which may be identical or different, have the same meaning as R_9 and each independently represent a hydrogen atom, an alkyl group containing from 1 to 20 carbon atoms, an alkenyl group containing from 2 to 20 carbon atoms, an alkynyl group containing from 2 to 20 carbon atoms or an aryl group containing from 6 to 20 carbon atoms, the hydrogen atoms linked to the carbon atoms of R_{14} , R_{15} and R_{16} possibly being partially or totally replaced with halogen atoms, alkoxy groups, phenoxy groups, disubstituted amino groups or silanyl groups;

- B_2 represents:

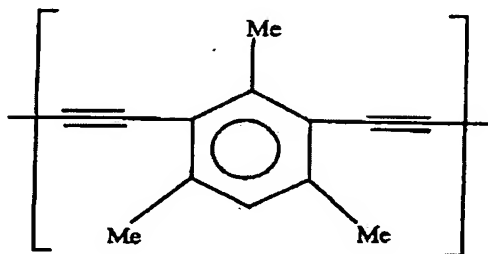


- in which R_{17} , R_{18} , R_{19} and R_{20} , which may be identical or different, each independently represent a halogen atom, an alkyl group containing from 1 to 20 carbon atoms, an alkoxy group containing from 1 to 20 carbon atoms, a phenoxy group containing from 6 to 20 carbon atoms, an aryl group containing from 6 to 20 carbon atoms, a substituted amino group containing from 2 to 20 carbon atoms or a silanyl group containing from 1 to 10 carbon atoms, the hydrogen atoms linked to the carbon atoms of the substituents R_{17} , R_{18} , R_{19} and R_{20} possibly being totally or partially replaced with halogen atoms, alkoxy groups, phenoxy groups, disubstituted amino groups or silanyl groups;

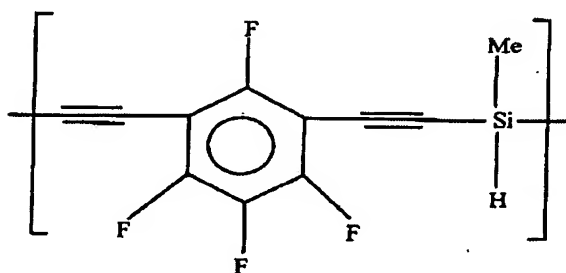
- B₃ represents:

a group chosen from divalent heterocycles such as those defined in the context of the definition of the group R₁₃ of B₁.

54. (Currently Amended) The polymer according to Claim 53, wherein the repeating unit ~~of which~~ corresponds to the formula:



55. (Currently Amended) The polymer according to Claim 53, wherein the repeating unit ~~of which~~ corresponds to the formula:



56. (Currently Amended) A cured product that may be obtained (that is obtainable) by heat treatment at a temperature of from 50 to 500°C of ~~the~~ a modified polymer poly(ethynylene phenylene ethynylene silylene) polymer obtainable by selective addition of a compound containing only one reactive function on the acetylenic bonds of a poly(ethynylene phenylene ethynylene silylene) polymer according to any one of Claims 1 to 37 and 52 to 55, optionally in the presence of a catalyst.

57. (Currently Amended) A composite matrix comprising the a modified poly(ethynylene phenylene ethynylene silylene) polymer obtainable by selective addition of a compound containing only one reactive function on the acetylenic bonds of a poly(ethynylene phenylene ethynylene silylene) polymer. ~~polymer according to any one of Claims 1 to 37 and 52 to 55.~~

58. (New) The modified polymer according to claim 1, in which the compound represents from 1% to 50%.

59. (New) The modified polymer according to claim 1, in which the compound represents from 10% to 40%.

60. (New) The modified polymer according to claim 16, in which the number-average molecular mass of polymers (I), (Ia) and (Ib) is from 400 to 5000, and the weight-average molecular mass is from 600 to 10000.